ABSTRACT

An integrated optical mode transformer provides a low loss interconnection between an optical fiber and an integrated optic waveguide having a spot size different from that of the fiber. The mode transformer is comprised of two waveguide layers, an upper layer and a lower layer, with the upper layer being contiguous to the lower layer. The lower layer is the integrated optic waveguide layer forming the optical circuit. The input dimensions of the composite two-waveguide structure supports a fundamental mode that accepts all of the light present on the optical fiber. The upper waveguide layer is tapered down from an input width to an output width and then terminates in such a way that at the termination substantially all of the input optical power resides in the lower waveguide layer. The two waveguide layer structure is fabricated by deposition and planarization techniques.